

## CHAPTER IV

### RESULTS AND ANALYSIS

This chapter deals with the results of the study. The data obtained from the tests distributed to the subjects was analyzed and interpreted using the SPSS/PC+ and MS Excel 2000 computer programs. All subjects of this study were from population of Thai high school students attending an intensive English summer camp program at the Asian University of Science and Technology in Pattaya, Chon Buri, Thailand, and all the participants of this study took both the pretest and the posttest. Means, percentages, standard deviation, and T-score were used to analyze the data.

The mean is the arithmetic mean of the arguments, calculated as the sum of all scores divided by the number of samples (sixteen in the control group and sixteen in the experimental group). The standard deviation for both the pretest and posttest was calculated.

It was done by using the "nonbiased" or "n-1" method, where "n" represented the number of subjects. The formula employed in calculating the standard deviation was:

$$SD = \sqrt{\frac{n \sum x^2 - (\sum x)^2}{n(n-1)}}$$

First, the pretest was administered in both groups. In the control group (group 1), the mean score was 34.375:

Table 1: Mean and percentages of total pretest scores (Group1)

Group 1 (The Control Group)	
Student #	Pretest Score (out of 100%)
1	36
2	21
3	17
4	47
5	42
6	36
7	37
8	41
9	32
10	25
11	38
12	39
13	21
14	39
15	37
16	42
SD	8.74738056
MEAN	34.375

In the experimental group (group 2), the pretest mean was almost the same as in the control group (group 1). The mean was 36.5.

Table 2: Mean and percentages of total pretest scores (Group 2)

Group 2 (The Experimental Group)	
Student #	Pre-test Score (out of 100%)
1	40
2	37
3	37
4	37
5	37
6	39
7	37
8	46
9	30
10	38
11	35
12	38
13	47
14	37
15	22
16	27
SD	6.164414003
MEAN	36.5

The means were almost equal (34.375 for the control group and 36.5 for the experimental group). T-score was also calculated (see below). Both groups were approximately at the same level in the beginning of the study. Both groups were taught using same materials yet the way of delivering the instruction differed (the traditional teacher-centered

instruction in the control group and cooperative learning in the experimental group). Finally, the same posttest was administered in both the control and experimental groups, and the obtained data (including the T-score) was analyzed.

Table 3: Means and percentages of total posttest scores (both groups)

Posttest Results (out of 100%)		
	Group 1	Group 2
Student #		
1	80	91
2	64	89
3	59	90
4	96	94
5	90	87
6	74	91
7	91	91
8	92	91
9	67	86
10	86	96
11	76	88
12	82	84
13	87	76
14	86	87
15	79	80
16	89	80
SD	10.726136	5.3661749
MEAN	81.125	87.5625

The posttest score mean in the control group was 81.125, while the posttest score mean in the experimental group was 87.5625. The

posttest score mean in the experimental group was higher than in the control group.

T-score was calculated as part of the correlation coefficient test to compare the differences between the two groups. The difference between pretest and posttest scores for the two groups was determined. The statistical significance, using a one-tailed test, was 0.026, which is highly significant. The correlation coefficient was 0.495. The researcher is thus more than 95% sure that the difference in scores was due to the teaching approach, in this case being the choice of cooperative learning in English immersion as a vehicle of instruction.

Overall performance of the experimental group was demonstrated as better than the overall performance of the control group, thereby supporting the hypothesis in favor of the effectiveness of cooperative learning strategies as applied in an English immersion program.